

REMARKS

By this Amendment, Applicant has canceled claim 8, amended claim 7, and added new claims 13-18 to this application. It is believed that the new and amended claims specifically set forth each element of Applicant's invention in full compliance with 35 U.S.C. § 112, and define subject matter that is patentably distinguishable over the cited prior art.

In the Office Action mailed on December 1, 2004, Claims 7, 11 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Blanchard et al. (U.S. 6,621,107 B2); and Claims 8-10 were objected to as being dependent upon a rejected base claim, but indicated as being allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 7 has been amended to include the language of claim 8, thereby redrafting claim 8 in independent form. Since no prior art was cited against claim 8, it is believed that claims 7 and 9-12 are in condition for allowance.

Applicant respectfully traverses the rejections based on the following reasons:

First, new claim 13 is believed to be patentable over Blanchard et al. because of the following language:

a second conductive type doped region formed beneath
all remnant portions of said first surface;
a Schottky barrier silicide layer formed on sidewalls of
epi layer portion and bottom of said trenches....

As is shown in FIG. 2 to FIG. 5 of the present Application, the first surface is the surface of substrate (100), and the second conductive type doped region is the p region (108). After the trenches (130) are formed, the remnant portions of first surface is the portions having oxide layer (110) formed thereon. Hence, Applicant believes that the subject matter "a second conductive type doped region formed beneath all remnant portion of said first surface" is distinguishable from FIG.7 (220) of Blanchard et al.

Furthermore, Applicant submits that the claim language "a Schottky barrier silicide layer formed on sidewalls of epi layer portion and bottom of said trenches" of the present Application is different from the Examiner's claim language "a Schottky barrier platinum-silicide layer formed (not shown) on the epi-layer located

on bottom and side surfaces of said trenches" (see page 3, lines 10-11, of the outstanding Final Office.)

Applicant submits that the silicide is formed on the sidewall of the trenches and the bottom of the trenches. Since only the lower portion of the sidewall has the epi- layer, thus the silicide is formed on the sidewalls of epi layer portion and bottom of the trenches.

However, in Blanchard et al., the wordings "silicide formed on the epi-layer located on bottom and side surface of said trenches" indicate that the epi-layer is located at the bottom only. The side surface of the trenches disclosed by Blanchard et al. do not have an epi-layer.

Second, the structure of the device in Blanchard et al. significantly differs from the present Application. The Examiner stated that the remarks/arguments in the last response were not persuasive because Blanchard et al. disclosed all essential aspects of the claimed invention. However, applicant respectfully submits that it is improper to combine selected portions of the fabricating structures with the final structure thereof in a manner so as to negate the patentability of the claimed subject matter because the selected portion(s) might be partially removed or completely removed during the fabricating processes. For instance, Examiner uses a portion of Blanchard et al. that is removed in the final structure to make Blanchard et al. readable on the claims of the present Application. On page 3, line 1 of the outstanding Office Action, the Examiner states: "a first oxide layer 203 (FIG.6B) formed on said first surface". However, in Blanchard et al., the first oxide layer (203) is no longer present in the final structure (FIG. 6F).

Third, on page 3, lines 6-9, of the outstanding Office Action, the Examiner stated:

a second conductive type doped region 220 (Fig.7) formed into said epi layer of said first mesa region and said termination mesa region, wherein said first mesa region and said termination mesa region are regions located on said first surface having said first oxide layer (203/216) formed thereon....

The Applicant believes this interpretation to be incorrect. In Fig. 7 of Blanchard et al., it is obvious that a conductive layer (218) is over the p+ region (220), but there is not an oxide layer (203). By contrast, the p-region 108 is adjacent the first surface and have oxide layer 110 formed thereon.

Blanchard et al. do not teach a second conductive type doped region formed beneath all remnant portions of said first surface; nor do Blanchard et al. teach a Schottky barrier silicide layer formed on sidewalls of epi layer portion and bottom of said trenches.

It is further submitted that Blanchard et al. do not disclose, or suggest any modification of the specifically disclosed structures that would lead one having ordinary skill in the art to arrive at Applicant's claimed structure. Thus, it is not believed that Blanchard et al. render obvious any of Applicant's new claims under 35 U.S.C. § 103.

Summary

In view of the foregoing amendments and remarks, Applicant submits that this application is now in condition for allowance and such action is respectfully requested. Should any points remain in issue, which the Examiner feels could best be resolved by either a personal or a telephone interview, it is urged that Applicant's local attorney be contacted at the exchange listed below.

Respectfully submitted,

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